brightness value of each pixel and storing the brightness values in digitized form on a data storage medium;

(b) dividing the image or a portion thereof into a preselected number of image elements arranged in rows, each image element comprising at least four pixels;

(c) determining the average brightness value of each image element by averaging the brightness values of the individual pixels of the image element;

(d) determining the difference between the average brightness values of adjacent image elements along a first specified row of image elements and providing at least one of a recording of the average brightness values machine readably on a data storage medium and output as a diagram in such a manner that a spatial correlation is obtained between the difference values and the position of the associated image elements on the image;

and, optionally

(e) stage (d) is repeated with a preseleceted number of additional rows of image elements which are substantially parallel to the first specified row.

A1 Con't

21. The process as claimed in claim 20 wherein, before determining the differences between the average brightness values of adjacent image elements, an illumination correction is performed by at least one of (a) subtracting a preselected correction value from the brightness values of each individual pixel before the average brightness value of the image elements is determined or (b) subtracting a preseleceted correction value from the average brightness values of the individual image elements, or (c) preselected correction value is added to these brightness values, the correction values associated with the individual pixels or image elements describing an area of the image or portion of image.

22. The process as claimed in claim 20, wherein rectangular or trapezoidal image portions are selected, the side lengths of which correspond to lengths in real space in the range from 1 mm to 5 m.

23. The process as claimed in claim 20, wherein sub-stages (d) and (e) are repeated with a second specified row of image elements which second row forms a preselected angle relative to the first specified row of image elements in the range from 60 to 120 degree.

A1 Con't

24. The process as claimed in claim 20, wherein the distribution of structures is monitored on a metal or plastic surface.

25. The process as claimed in claim 24, wherein metal or plastic surface on which the occurrence of water drops is monitored after a preceding cleaning and/or hydrophilisation operation.

26. The process as clamed in claim 24, wherein the metal or plastic surface has been subjected to chemical treatment or coating.

27. The process as claimed in claim 26, wherein the metal surface has been subjected to at least one chemical treatment selected from the group consistent of chromating, treatment with an acidic solution of simple and/or complex fluorides, treatment with a solution of transition metal compounds, film-forming phosphating and non-film-forming phosphating.

28. The process as claimed in claim 26, wherein the metal or plastic surface has been coated with a crosslinkable organic substance.

29. The process as claimed in claim 25, wherein in sub-stage (a), a first image of at least approximately the same point on the metal or plastic surface is produced before and a second image after at least one of cleaning, hydrophilisation, chemical treatment and coating wherein before or after performing sub-stages (b) and (c) for at least the second image, the two images are superimposed computationally by searching for characteristic

points on the metal or plastic surface which are detectable on both images, these characteristic points on the two images are at least approximately superimposed and the brightness values of the pixels or the average brightness values of the image elements in the first image are then subtracted from the brightness values of the corresponding pixels or image elements in the second image, before sub-stage (d) and, optionally, sub-stage (e) is performed with the second image.

A1 Cont'd

30. The process as claimed in claim 24, wherein at least one of the following actions is automatically initiated when the difference in the brightness values of adjacent image elements exceeds a specified amount at least one or n times, wherein n means a specified number:

(i) output of a warning;

(ii) start of checking of at least one piece of the treatment or coating equipment with which the metal or plastic surface has come into contact before sub-stage (a);

(iii) shut-down of the plant performing the cleaning and/or hydrophilisation, chemical treatment or coating.

31. The process as claimed in claim 20 for monitoring the distribution of particles in a jet of particles, wherein at least one image of a particle jet produced by spraying through one or more nozzles is monitored, which image is recorded substantially perpendicularly to the spray axis.

32. The process as claimed in claim 31, wherein sub-stages (a) to (e) are repeated at least once with images, the image planes of which form a specified angle relative to each other.

33. The process as claimed in claim 31, wherein the particles are droplets of a solution or a suspension which are dried in the particle jet to yield solid particles, or droplets of a melt which solidify in the particle jet to yield solid

particles.

34. The process as claimed in claim 31, wherein the particles are droplets of a solution, suspension or melt which are sprayed onto a surface to produce a coating on the surface.

A1 Cont'd

35. The process as claimed in claim 31, wherein the particles are solid particles with which a surface is coated.

36. The process as claimed in claim 31, wherein a warning is automatically output when the difference in the brightness values of adjacent image elements within the particle jet exceeds a specified amount.

37. The process as claimed in claim 31, wherein the angle of divergence of a particle jet produced by spraying through one or more nozzles is monitored.

38. The process as claimed in claim 37, wherein at least one of the following actions is automatically initiated when the angle of divergence of the spray jet falls below or exceeds a specified angle range:

(i) output of a warning;

(ii) modification of the spray pressure in a direction which returns the angle of divergence of the spray jet to within the specified angle range;

(iii) modifications of the viscosity of the composition from which the spray jet is produced in a direction which returns the angle of divergence of the spray jet to within the specified angle range;

(iv) modification of the electrical charge of the particles of the spray jet or of electric fields in the vicinity of the nozzles in a direction which returns the angle of divergence of the spray jet to within the specified angle range;